CLAIMS:

1. A method comprising:

positioning an aperture mask in proximity to a deposition substrate;

stretching the aperture mask to align the aperture mask with the deposition substrate; and

depositing material through the stretched aperture mask to form a layer on the deposition substrate.

2. The method of claim 1, wherein stretching the aperture mask comprises stretching the aperture mask into alignment with one or more features on the deposition substrate.

3. The method of claim 1, further comprising positioning the aperture mask under the deposition substrate, wherein stretching the aperture mask reduces sag in the aperture mask.

4. The method of claim 1, wherein the aperture mask is a polymeric aperture mask.

5. The method of claim 1, wherein the layer on the deposition substrate comprises a layer in an integrated circuit.

6. The method of claims 5, wherein the layer in the integrated circuit comprises a layer in an organic light emitting diode.

7. The method of claim 5, wherein the layer in the integrated circuit comprises a layer in a radio frequency identification circuit.

8. A polymeric aperture mask, the polymeric aperture mask comprising:

a polymer, and

a magnetic material.

9. The polymeric aperture mask of claim 8, wherein the magnetic material is impregnated into the polymer.

10. The polymeric aperture mask of claim 8, wherein the magnetic material is coated on the polymer.

11. The polymeric aperture mask of claim 8, wherein the magnetic material is laminated to the polymer.

12. The polymeric aperture mask of claim 8, wherein the polymeric aperture mask is formed with a pattern of deposition apertures, wherein the pattern has a dimension greater than approximately 1 centimeter and wherein at least one of the deposition apertures has a width less than approximately 1000 microns.

13. The polymeric aperture mask of claim 8, wherein the magnetic material magnetically interacts with a magnetic structure to control sag in the polymeric aperture mask during a deposition process.

14. A deposition system comprising:

a polymeric aperture mask including a polymer and magnetic material; and

a magnetic structure that magnetically interacts with the magnetic material to reduce sag in the polymeric aperture mask during a deposition process.

15. The deposition system of claim 14, wherein the magnetic material is impregnated into the polymer.

16. The deposition system of claim 14, wherein the magnetic material is coated on the polymer.

17. A repositionable polymeric aperture mask for use in a vapor deposition process, the polymeric aperture mask formed with a pattern of deposition apertures that define at least a portion of an integrated circuit, wherein the portion of the integrated circuit

includes at least one thin film transistor, wherein the pattern has a dimension greater than approximately a centimeter and wherein at least one of the deposition apertures has a width less than approximately 1000 microns.

18. The polymeric aperture mask of claim 17, wherein a gap between at least two deposition apertures is less than approximately 1000 microns.

19 The polymeric aperture mask of claim 17, wherein the pattern has a dimension greater than approximately 25 centimeters.

20. The polymeric aperture mask of claim 19, wherein the pattern has a dimension greater than approximately 100 centimeters.

21. A method comprising:

positioning a flexible repositionable polymeric aperture mask in proximity to a deposition substrate;

controlling sag in the flexible aperture mask; and

depositing material through the flexible aperture mask to form a layer on the deposition substrate that defines at least a portion of an integrated circuit.

22. The method of claim 21, wherein the flexible aperture mask comprises a patterned polymeric film impregnated with magnetic material, and wherein controlling sag comprises applying a magnetic field to attract or repel the magnetic material in a manner that reduces sag in the flexible aperture mask.

23. The method of claim 21, wherein controlling sag comprises applying a static charge to the flexible aperture mask and electrostatically attracting or repelling the charged flexible aperture mask in a manner that reduces sag.

24. The method of claim 21, wherein the flexible aperture mask includes a pressure sensitive adhesive on one side, wherein controlling sag comprises adhering the flexible aperture mask to the deposition substrate via the pressure sensitive adhesive.

25. The method of claim 21, wherein controlling sag comprises stretching the flexible aperture mask.

26. A method comprising:

ablating a polymeric film formed with a material layer on a first side of the polymeric film from a side opposite the material layer to define a pattern in the polymeric film, wherein the pattern defines deposition apertures that extend through the polymeric film; and

removing the material to form a polymeric aperture mask.

27. The method of claim 26, wherein ablating the polymeric film comprises ablating a polyimide film.

28. The method of claim 26, further comprising purchasing the polymeric film formed with the material layer on the first side of the polymeric film.

29. The method of claim 26, further comprising forming the material layer on the first side of the polymeric film.

30. The method of claim 26, further comprising forming the polymeric film on the material layer.

31. The method of claim 26, wherein the material layer comprises a metal layer.

32. The method of claim 31, wherein the metal layer comprises a copper layer.

33. The method of claim 31, wherein removing the material layer comprises etching the metal layer from the polymeric film.

34. The method of claim 31, wherein removing the material layer comprises peeling the metal layer from the polymeric film.

35. The method of claim 26, further comprising:

forming a number of polymeric aperture masks; and

using the polymeric aperture masks in a series of depositions to create an integrated circuit.

36. A method comprising

forming a repositionable aperture mask by ablating a polymeric film to define a pattern; and

using the aperture mask in a deposition process.

37. The method of claim 36, wherein the pattern defines first and second pattern elements separated by more than approximately 25 centimeters.

38. The method of claim 36, further comprising using the aperture mask in the deposition process to create a layer of an integrated circuit, wherein the layer includes first and second circuit elements.

39. The method of claim 38, wherein the first and second circuit elements are separated by more than approximately a centimeter.

40. The method of claim 39, wherein the first and second circuit elements are separated by more than approximately 25 centimeters.

41. The method of claim 40, wherein the first and second circuit elements are separated by more than approximately 500 centimeters.

42. The method of claim 36, wherein the pattern defines at least one deposition aperture having a width less than approximately 1000 microns.

43. A method comprising:

forming a repositionable polymeric aperture mask;

using the polymeric aperture mask as a pattern in an etching process to etch at least one layer of a thin film transistor.

44. The method of claim 43, further comprising reusing the polymeric aperture mask as a pattern in another etching process.

45. The method of claim 43, wherein forming the polymeric aperture mask includes:

laser ablating a polymeric film to define a pattern of apertures that extend through the polymeric film.

46. The method of claim 43, wherein forming the polymeric aperture mask includes:

ablating a polymeric film formed with a metal layer on a first side of the polymeric film from a side opposite the metal layer to define a pattern in the polymeric film; and

removing the metal layer to form a polymeric aperture mask.

47. A method comprising:

positioning a repositionable polymeric aperture mask over a non-planar deposition substrate; and

forming at least one layer of an integrated circuit on the non-planar deposition substrate by depositing material onto the non-planar deposition substrate through the polymeric aperture mask, wherein the layer of the integrated circuit includes at least a portion of a thin film transistor.

48. The method of claim 47, wherein the non-planar deposition substrate has a curved surface.

49. The method of claim 48, wherein positioning the polymeric aperture mask comprises positioning the polymeric aperture mask such that the mask is in intimate contact with the curved surface of the non-planar deposition substrate.

50. The method of claim 47, further comprising forming the polymeric aperture mask.

51. The method of claim 50, wherein forming the polymeric aperture mask includes laser ablating a polymeric film to define a pattern.

52. The method of claim 50, wherein forming the polymeric aperture mask includes:

ablating a polymeric film formed with a metal layer on a first side of the polymeric film from a side opposite the metal layer to define a pattern in the polymeric film; and

removing the metal layer to form a polymeric aperture mask.

53. The method of claim 47, further comprising:

sequentially positioning a number of polymeric aperture masks over the non-planar deposition substrate; and

forming an integrated circuit on the non-planar deposition substrate by depositing materials onto the non-planar deposition substrate through the polymeric aperture masks.

54. The method of claim 53, wherein the integrated circuit defines circuit elements separated by more than approximately 1 centimeter.

55. The method of claim 54, wherein the integrated circuit defines circuit elements separated by more than approximately 25 centimeters.

56 The method of claim 47, wherein at least one layer of the integrated circuit defines at least one feature having a width less than approximately 1000 microns.

57. The method of claim 56, wherein at least one layer of the integrated circuit defines at least one feature having a width less than approximately 50 microns.

58. The method of claim 57, wherein at least one layer of the integrated circuit defines at least one feature having a width less than approximately 20 microns.

59. A repositionable polymeric aperture mask comprising a pattern of deposition apertures that define at least a portion of an integrated circuit, wherein the pattern has a dimension greater than a centimeter, wherein at least one deposition aperture has a width

less than approximately 1000 microns and wherein the portion of the integrated circuit comprises at least a portion of a thin film transistor.

60. The repositionable polymeric aperture mask of claim 59, wherein the mask has a thickness between approximately 5 and 50 microns.

61. A repositionable polymeric aperture mask comprising:

a polyimide; and

a pattern of deposition apertures, wherein the pattern has a dimension greater than a centimeter, and wherein at least one deposition aperture has a width less than approximately 1000 microns.

62. The aperture mask of claim 61, wherein at least one deposition aperture has a width less than approximately 20 microns.

63. The aperture mask of claim 61, wherein at least two deposition apertures are separated by less than approximately 1000 microns.

64. The aperture mask of claim 63, wherein at least two deposition apertures are separated by less than approximately 50 microns.

65. A method comprising:

ablating a pattern in a polymeric film to create a repositionable polymeric aperture mask, wherein the pattern defines at least one deposition aperture that corresponds to an element of an integrated circuit.

66. The method of claim 65, wherein at least one deposition aperture has a width less than approximately 1000 microns.

67. The method of claim 65, wherein the pattern defines at least two deposition apertures separated by a gap less than 1000 microns.

68. The method of claim 65, further comprising depositing material on a deposition substrate through the polymeric aperture mask to define a patterned layer of an integrated circuit.

69. The method of claim 65, wherein ablating comprises laser ablating.

70. The method of claim 69, further comprising controlling the laser ablation to create an acceptable wall-angle of one or more of the deposition apertures.

71. The method of claim 65, further comprising:

ablating patterns in a number of polymer films to create a number of polymeric aperture masks; and

depositing a number of different materials on a deposition substrate through the number of polymeric aperture masks to define a number of layers of an integrated circuit.

72. The method of claim 71, wherein depositing a number of different materials includes depositing an organic semiconductor, and wherein at least one layer is deposited on top of the organic semiconductor.

73. A method comprising depositing material on a deposition substrate through a repositionable polymeric aperture mask to define a patterned layer of an integrated circuit, wherein the aperture mask includes a patterned area with a dimension greater than a centimeter, and wherein the patterned layer of the integrated circuit comprises at least a portion of a thin film transistor.

74. The method of claim 73, wherein the repositionable polymeric aperture mask is formed with at least one deposition aperture having a width less than approximately 1000 microns.

75. The method of claim 73, wherein the repositionable polymeric aperture mask is formed with at least one deposition aperture having a width less than approximately 50 microns.

76. The method of claim 73, further comprising sequentially depositing a number of materials on the deposition substrate through a number of repositionable polymeric aperture masks to define an integrated circuit.

77. A method comprising:

ablating a pattern of deposition apertures in a polymeric film to create a repositionable polymeric aperture mask for use in a deposition process for integrated circuit fabrication; and

controlling the ablation to create an acceptable wall-angle for one or more of the deposition apertures.

78. The method of claim 77, wherein ablating comprises laser ablating.

79. The method of claim 77, wherein the pattern defines at least one deposition aperture having a width less than approximately 1000 microns.

80. The method of claim 77, wherein the pattern defines at least two deposition apertures separated by a gap less than approximately 1000 microns.

81. An aperture mask comprising:

a mask substrate formed with a pattern of deposition apertures; and

distortion minimizing features in the mask substrate,wherein the distortion minimizing features are located near edges of the pattern.

82. The aperture mask of claim 81, wherein the aperture mask includes extension portions of the mask substrate, wherein the distortion minimizing features are included in the extension portions.

83. The aperture mask of claim 81, wherein the distortion minimizing features are selected from the group consisting of: slits in the mask substrate, holes in the mask

substrate, perforations in the mask substrate, and reduced thickness areas in the mask substrate.